

Clinicoepidemiological study of herpes zoster at rural based tertiary center of Gujarat

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Abstract

Introduction: Herpes zoster is a very common clinical condition caused by varicella zoster virus. Few studies are done covering the aspects like clinical presentation, epidemiology of this very common yet old disease.

Objective: To find out clinical presentation, morphological pattern, evolution of herpes zoster along with its comorbid conditions.

Materials and Methods: This was an analytical study conducted from June 2008 to December 2016 based on a preformed proforma carried out at skin department of rural based tertiary health care center. We have used Chi square test to analyze and tabulate the data obtained. It is an Observational and cross-sectional study.

Results: Total 938 patients of herpes zoster were enrolled in the study. The incidence of herpes zoster amongst skin OPD cases was found to be 0.38%. The male to female ratio was found to be 1.37:1. Herpes zoster was mainly seen in the age group of 40-60 years (33.8%). The most common prodromal symptom seen was itching in 458 cases (41.5%). Most common presenting complaint was pain in 458 patients (41.50%). The past history of chicken pox was present in 22.7% patients. The commonest segment affected was thoracic in 374 cases (38.9%). Unidermatomal involvement was seen in 886(94.5%) cases, while multidermatomal involvement was seen in 43(4.6%) cases and disseminated in 9 (0.9%) cases. All the cases were screened for HIV, out of them; 40 (4.3%) were seropositive for HIV.

Conclusion: Herpes zoster more commonly occurs in the age group of 40-60 years. Most common presenting complaint is burning type of pain. Most common dermatome involved is thoracic dermatome.

Keywords: Herpes Zoster, Varicella zoster virus, Dermatome.

What is known: Patients with immunosuppressive states like HIV positivity, malignancy present with atypical forms of herpes zoster

What is new: Usually patients of HIV presents with severe forms of zoster but in our study, 57.14% of HIV positive patients presented with typical localized dermatomal involvement.

Introduction

Herpes zoster (HZ) is a localized disease which presents as unilateral radicular pain with vesicular eruption in the area limited to a dermatome innervated by a single spinal or cranial sensory ganglion.¹ HZ may also affect motor neurons in rare cases.² It is caused by the neurodermotropic virus called "varicella zoster virus" and is distributed worldwide. This benign localized viral disease has been recognized as a distinct entity since ancient times. Varicella-zoster virus (VZV) causes two distinct syndromes. Primary infection, chickenpox is contagious and usually presents as benign febrile illness. Chicken pox occur due to inhalation of viral particles. After this infection resolves, virus particles remain in the dorsal root or other sensory ganglion where they may lay dormant for years to decades.³ HZ results from the reactivation of varicella-zoster virus (VZV) lying dormant in the dorsal root ganglia.

The lifetime risk of developing HZ is about 20-30%.⁴ The incidence of HZ increases with age from 2

to 3 cases per thousand/year among adults below 50 to 10 cases per thousand year in the over-eighties (1% per annum).⁵ The annual incidence of HZ worldwide is approximately 1.2-3.4 cases per 1,000 persons.⁶ The condition is benign and self-limiting in patients with normal immunological status. The incidence of zoster is considerably increased in human immunodeficiency virus (HIV)-positive adults and children. In HIV disease it presents in diverse manner such as multidermatomal involvement, crusted, nodular or vesiculopustular, ulcerative, and ecthymatous lesions that may be widely disseminated or localized.⁷ Depending upon the immune status of the patient, the presentation may vary from no clinical lesions, to typical zoster, scattered vesicles, zoster sine herpette or disseminated zoster.⁸ We undertook this study to know the clinical and morphological characteristics of herpes zoster.

Materials and Methods

The study was carried out in the department of dermatology in a teaching institute at a rural based tertiary care centre of Gujarat from June 2008 to December 2016 (8.5 years) after getting ethical approval from HREC department of our institute. The study population included all the patients with a diagnosis of herpes zoster attending dermatology department. This was an analytical study based on a predesigned proforma containing patient's demographic

data, symptoms, risk factors and associated systemic disease, the segment of involvement, morphology, pattern of lesions, dissemination. Written informed consent of the patient was taken. Diagnosis was established by history and clinical examination, Tzanck smears and skin biopsy were taken wherever required. We have used Chi square test to analyze and tabulate the data obtained.

Results

Total 938 cases of herpes zoster were recorded from June 2008 to December 2016. Total 2,48,897 new cases attended skin OPD during the study period, out of which 0.38% had herpes zoster. The mean age at presentation was 45.9 years with the range from 2 to 87 years. Male to female ratio was 1.37:1. The maximum incidence was in the age group of 41-60 years seen in 317 (33.8%) patients. (Table 1) Out of 938 cases, 213 cases (22.7%) had definite history of chicken pox. Majority of the cases, 477 (50.8%) presented between 0-3 days. (Table 1) Prodromal symptoms were recorded in 93.9% cases. More than one prodromal symptom was also observed in several patients. Most common prodromal symptoms was itching in 409(43.6%) cases. (Table 1) Most common presenting complaint was pain in 90% with burning type of pain being most common in 720 (76.8%) patients. (Table 1) Right side dermatomes were involved in 502 (53.5%) patients while left sided dermatomes were involved in 433 (46.2%) (Table 1) Thoracic dermatome was most commonly involved in 374 (38.9%) cases. (Table 2) Localised type of involvement was seen in 886 (94.5%) cases whereas 43 (4.6%) had multiple dermatomal involvement and 9 (0.9%) had disseminated herpes zoster (Table 2). 699 cases (74.5%) were below 60 years of age and 239 cases (25.5%) above 60 years (Table 1). 40(4.3%) were HIV positive out of which 29(3.09%) were males and 11 (1.17%) were females (Table 2). Among HIV +ve, 23 (57.14%) patients had localized dermatomal involvement [Fig. 1] 15 (37.14%) patients had multiple dermatomal involvement [Fig. 2] and only 2 (5.7%) had disseminated zoster. Out of 938 cases, 858 (91.5%) cases were having classical herpes zoster, 50 (5.29%) cases had crusted lesions [Fig. 3], 10 (1.07%) had bullous lesions [Fig. 4], 8 (0.83%) cases had haemorrhagic bullae, 1 (1.12%) case had necrotic / ulcerative lesions. Scarring was seen in 11 (1.19%) patients.

There was no significant difference in dermatomal involvement among males and females (χ^2 p value = 0.45). There was no difference in the dermatome involved in patients above 60 years of age and below 60 years. (χ^2 p =0.92).

Table 1: Details of patients with herpes zoster

Age	
0-20 years	95 (10.4%)
21-40 years	287 (30.6%)

40-60 years	317 (33.8%)
>60 years	239 (25.5%)
Duration of Herpes zoster at the time of presentation	
0-3 days	477 (50.8%)
4-6 days	284 (30.3%)
>6 days	177 (18.9%)
Type of pain	
Burning	720 (76.8%)
Throbbing	49 (5.2%)
Pricking	69 (7.4%)
Itching	75 (8%)
No pain	25 (2.6%)
Side of involvement	
Right	502 (53.5%)
Left	433 (46.2%)
Bilateral	3 (0.3%)
Prodromal symptoms	
Paresthesia	103 (11%)
Itching	409 (43.6%)
Burning	171 (18.2%)
Tingling	113 (12%)
Watering from eyes	22 (2.3%)
Head ache	32 (3.4%)
Frontal sinusitis	08 (0.9%)
Fever	23 (2.5%)
No prodrome	57 (6.1%)

Table 2: Sex wise distribution of site and type of dermatomal involvement in herpes zoster and their HIV status

	Male	Female	Total
Site of dermatomal involvement			
Thoracic	218	156	374 (38.9%)
Cervical	94	75	169 (17.5%)
Lumbar	70	44	114 (11.8%)
Ophthalmic	84	50	134 (13.9%)
Mandibular	22	20	42 (4.4%)
Sacral	35	34	69 (7.2%)
Maxillary	37	22	59 (6.13%)
Type of involvement			
Localised	513	373	886 (94.5%)
Multiple	23	20	43 (4.6%)
Disseminate d	5	4	9 (0.9%)
HIV testing			
Positive	29	11	40 (4.3%)
Negative	513	385	898 (95.7%)



Fig. 1: Localised herpes zoster ophthalmicus



Fig. 2: Multiple dermatomal involvements



Fig. 3: Crusted lesions of herpes zoster



Fig. 4: Extensive vesiculobullous lesions of herpes zoster

Discussion

Herpes zoster caused by varicella zoster virus, occurs due to reactivation of the virus particles that lie dormant in the dorsal root ganglion. The reactivation of the virus may be due to immunosuppression or spontaneous. Balance between virus and host factors appear to be responsible for reactivation. During reactivation, VZV overwhelms immune control and

spreads in the affected ganglia and sensory nerves to the skin.⁹ Triggering factors include stress or local trauma, diminished immune response or in association with malignancies, chronic hepatitis, polymyalgia rheumatica, acute rheumatic fever.¹⁰ Most commonly, advanced age, which acts as a surrogate for waning of cell-mediated immunity, is an important recognized risk factor.¹¹ In patients with impaired immunity, both the incidence and severity of HZ are increased.¹² HIV patients have an incidence rate of HZ up to 10 times higher than the general population.⁵ In our study, 95 (10.4%) were less than 20 years of age, while in a study by Dubey A K et al,⁸ 5.6% were children. The average age of presentation in our study was 45.9 years, similar to findings of Goh and Khoo.¹³ While in Dubey A K et al⁸ study the average age at presentation was 37.65 years. Whitley, et al reported that zoster afflicts 20% of general population, during their life time, especially in elderly.¹⁴ The increased incidence of HZ in the elderly is related to the selective decline in cell-mediated immunity against VZV due to advancing age.⁵ A study showed that the rate of occurrence of herpes zoster is in the range at 1.3 to 5 per thousand persons per year, although it may be seen in any age group.¹⁵ A positive history of chicken pox was present in only 22.7% cases. The remaining cases were neither aware of nor had chicken pox at all. In these cases where past history of varicella was not obtained, it is suggested that the initial contact with the virus may result in zoster.¹⁶

Out of 938 patients, 382 (41%) were below 40 years while 556 cases (59%) were above 40 years. In Latheef and Pavithran et al, 55% were below the age of 40 years and 45% above 40 years.⁷ Pavithran and Sehgal et al study also showed findings similar to above study.^{17,18} Males outnumbered females in the ratio of 1.37:1 in our study, which was similar to 1.75:1.3 in Latheef and Pavithran et al study.⁷ Male preponderance in Indian setup can be attributed to trauma and stress as a result of their occupation and outdoor activity which might be acting like a predisposing factor.

The nerves most commonly affected with HZ are C3, T5, L1, L2, and the first division of the trigeminal nerve.¹⁰ In our study, thoracic dermatome was most commonly involved in 374 (38.9%) cases followed by cervical and ophthalmic in 169 (17.5%) and 134 (13.9%) cases in each, lumbar in 114 (11.8%) cases. 69 (7.2%) cases had sacral, 59 (6.13%) had maxillary and 42 (4.4%) had mandibular involvement. In Dubey A K et al study, thoracic dermatome was involved in 64 (54.8%) cases followed by cervical in 17 (15.8%) cases, lumbar in 13 (12.1%) cases, ophthalmic branch of trigeminal nerve in 10 (9.3%) cases, sacral and maxillary branch of trigeminal nerve in one case each.⁸ In the study by Goh and Khoo dermatomes most commonly involved were thoracic in 45% and cervical in 23%.¹³

The average duration at presentation in our study was 5.2 days while in Dubey A K et al it was 3.25 days.⁸

In Dubey A K et al Cervical and lumbar dermatomes were more frequently involved in females than in males and this finding was statistically significant (χ^2 p value = 0.03)⁸, while in our study, we did not find any significant difference in dermatomal involvement among males and females (χ^2 p value = 0.45). In Dubey A K et al multidermatomal and disseminated herpes zoster was more frequent in females than males.⁸ Our findings were similar to above study. Localised type of involvement was seen in 886 (94.5%) patients, 43 (4.6%) had multidermatomal involvement and 9 (0.9%) had disseminated herpes zoster. 699 (74.5%) cases were below 60 years of age and 239 (25.5%) cases above 60 years. Statistically there was no significance difference (χ^2 p value = 0.92) in dermatomal involvement in people aged less than 60 years when compared with the people aged more than 60 years. These findings were similar to Dubey A K et al study (p = 0.065).⁸ In our study, right side of body involved in 375 (54.5%) cases while left side of body is involved in 311 (45.2%) cases, bilateral involvement was seen in 2 (0.3%) cases. While in Dubey A K et al study, 61 (57%) cases, lesions of herpes zoster were seen on right half of the body and in 44 (41.1%) cases on left side.⁸ Among HIV +ve, 23 (57.14%) patients had localized dermatomal involvement, 15 (37.14%) patients had multiple dermatomal involvement and only 2 (5.7%) had disseminated zoster. Herpes zoster is a clinical indicator of decreasing immunity and its occurrence should raise the issue of HIV serotyping.¹⁹ Usually in HIV, herpes zoster occurs when the CD4 count is between 200-500 per microliter.¹⁹

To conclude, herpes zoster normally occurs in adults in India. Most common type of pain was burning pain. The occurrence of hemorrhagic, crusted and ulcerated lesions can be seen. Thoracic dermatome was most commonly involved dermatome. Although in HIV infection, herpes zoster presents with multiple dermatomal or disseminated involvement but typical presentation is also very common. So, all the patients of herpes zoster should be screened for immunosuppressive states.

References

- Seetharam A K. Viral Infections. In: Sacchidanand S, Oberai C, Inamdar C A editors. IADVL textbook of dermatology. 4th ed. Bhalani publishing house. 2015. P.583.
- Shin MK, Choi CP, Lee MY. A case of herpes zoster with abducens palsy. J Korean Med Sci 2007;22:905-7.
- Bhatnagar RK. Herpes zoster ophthalmicus: Medical Journal of Dr. D.Y. Patil University 2013;6(3):292-93.
- Gialloreti LE, Merito M, Pezzotti P, Naldi L, Gatti A, Beillat M, et al. Epidemiology and economic burden of herpes zoster and postherpetic neuralgia in Italy: A retrospective, population-based study. BMC Infect Dis 2010;10:230.
- Mandal BK: Herpes zoster in the immunocompromized populations Indian J Dermatol 2006;51(4)235-43.
- Chen YH, Rau RH, Keller JJ, Lin HC. Possible effects of anaesthetic management on the 1 yr followed-up risk of herpes zoster after Caesarean deliveries. Br J Anaesth 2012;108:278-82.
- Abdul Lateef EN, K Pavithran Herpes Zoster: A clinical study in 205 patients. Indian Journal of Dermatology 2011;56(5):529-532.
- A K Dubey, T J Jaishankar, D M Thappa. Clinical and morphological characteristics of herpes zoster in south India. Indian Journal Of Dermatology 2005;50(4):203-207.
- Whitley R. Varicella-Zoster virus. In: Mandell G, Bennett J, Dolin R, editors. Principles and practice of infectious disease. 6ed. Philadelphia: Churchill- Livingstone; 2005.p.1781-5.
- Gupta S, Sreenivasan V, Patil PB. Dental complications of herpes zoster: Two case reports and review of literature. Indian J Dent Res 2015;26:214-9.
- Mandal BK. Herpes zoster in the immunocompromized populations. Indian J Dermatol 2006;51:235-43.
- Burns T, Breathnach S, Cox N, Christopher G. Rook's textbook of dermatology, 17th ed. Massachusetts: Blackwell; 2004.p.22-8.
- Goh CL, Khoo L. A retrospective study of the clinical presentation and outcome of herpes zoster in a tertiary dermatology outpatient referral clinic, Int J Dermatol 1997;36:667-72.
- Whitley RS. Varicella- zoster virus. In: Mandel GZ, Bennet JE, Dolin R, eds. Principles and practice of infectious disease. 4th edn., New York: Churchill Living stone, 1995;1345-51.
- Ragozzino MW, Melton LJ, Kurland LT, et al. Population based study of herpes zoster and its sequelae. Medicine (Baltimore) 1982;6:310-6.
- Nair P, Patel P. Herpes zoster in children and adolescents: Case series of 8 patients. National journal of community medicine. 2013;4(1):182-4.
- Pavithran K. A clinical study of five hundred cases of herpes zoster. Antiseptic 1986;83:682-5.
- Sehgal VN, Rege VL, Kharangate VN. The natural history of Herpes Zoster. Indian J Dermatol Venereol Leprol 1976;42:86-89.
- Thappa D M. Cutaneous manifestations of HIV infection. In: Valia RG, Valia AR editors. IADVL textbook of dermatology. 3rd ed. Bhalani publishing house. 2012. P.1950-75.